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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/446,471	03/24/2000	LI ZHANG	IOLL-281	2358

7590 06/17/2003  
MARK G LAPPIN  
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28 STATE STREET  
BOSTON, MA 02109-1775

EXAMINER

FORTUNA, ANA M

ART UNIT	PAPER NUMBER
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1723

DATE MAILED: 06/17/2003

20

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/446,471

Applicant(s)

Zhang

Examiner

Ana Fortuna

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1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Mar 24, 2003
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_ 6) ☐ Other:

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## DETAILED ACTION

### *Claim Rejections - 35 U.S.C. § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3, 4, 12, 14, 15, 16, 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Tanabe et al (hereinafter '846) . Reference '846 discussed in the prior Office actions (paper No..14). The rejection is now changed from 102 to 103, based on the amendments presented on paper no.16, and response of paper no. 19. Claim 1 is directed to a process comprising the combination of deionization, contacting deionized water with and agent (UV treatment), and further treating the treated water of the UV, by deionization. '846 teaches combining deionization,. RO treatment of the water with or EDI treated water with UV oxidizer and further deionization by a cartridge polisher. Reference '846 differs from the present invention in that intermediate units are placed in the system or process between units, e.g. additionally vacuum and boron removal units are also included to remove boron from the system. However, removal of organics, e.g. TOC, which includes ionizable, non ionizable, ionized and nonionized organic from the water to be treated is disclosed, or is inherent from the process. Reference '846, teaches removal of ionic and non-ionic organic substances , by adjusting pH and further treating with

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reverse osmosis membrane as deionization unit alone, further adding additional UV treatment and polishing, e.g. ion exchange, will further remove cation and anions from the water (column 2, lines 42-68, column 3, lines 1-31). It would have been obvious to one skilled in the art at the time the invention was made to expect the production of deionized water and water with a low TOC level from the process of '846, or further modify the process to eliminate the degasification and boron treatment, depending on the feed water composition and the degree of ionic or ionizable components present in the water to be treated.

3. Claims 2, 5, 8, 13, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanabe et al as applied to claims 1, 3, 4, 12, 14, 15, 16 above, and further in view of White (hereinafter '509). This rejection has been discussed in the record and is maintained..
4. Rejection of claims as discussed in paper no. 14, paragraphs 6 and 7 are also maintained.

#### ***Response to Arguments***

4. Applicant's arguments filed 3/24/03 have been fully considered but they are not persuasive. In view of applicant's amendment and arguments, the rejection under 102, have been changed to a rejection under 103, as discussed in paragraph 2 above. The rejection based in the combination with white is maintained, white ('509) teaches removing TOC from water by treating the water with deionization, ultraviolet light exposure, and recirculating the water between this treatment (column 1, lines 28-47), which substantially cover the limitations of oxidation between deionization, and the limitations of claim 2 of using the same treatment unit in both deionization treatment. In the later reference, the water composition including ionized/ionizable, non-

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ionized/non-ionizable organics is not disclosed in details, however, the term TOC includes all the forms of carbon containing compounds present in the water in any form. White also teaches treating the feed water by reverse osmosis and further treatment by UV and CDI to remove remaining TOC (example V). For this reasons the combination of '846 and the '509 is considered proper. Rejection based on '608 is maintained because the reference clearly teaches the removal of TOC by reverse osmosis, the oxidation of organics by addition of hydrogen peroxide, producing ultrapure water by combining pretreatment, UV sterilization, reverse osmosis, ion exchange, etc. Reference '908 teaches treatment of water with ozone before threaded with a reverse osmosis membrane or an electrodeionization unit, and further teaches the units, e.g. RO and ED or IE as interchangeable in the system or process (column 6, lines 36-42, which support the rejection as discussed on paper no. 14.

### ***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CAR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CAR

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1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ana Fortuna whose telephone number is (703) 308-3857. The examiner can normally be reached on Monday-Friday from 9:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker, can be reached on (703) 308-0457. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310 for regular responses, and (703)872-9311 for after finals.

Ana Fortuna

June 12, 2003



**ANA FORTUNA**  
**PRIMARY EXAMINER**